

REMARKS/ARGUMENTS

Claims 20-29 and 31-36 are pending in this application. By this Amendment, Applicant cancels Claims 19 and 30 and amends Claims 21-29 and 32-36.

Claims 30, 33, and 34 were rejected under 35 U.S.C. § 102(b) as being anticipated by Sugimoto et al. (WO 01/95361). Claims 19, 25-27, 30, and 36 were rejected under 35 U.S.C. § 102(b) as being anticipated by Takahashi et al. (JP 07-152153). Claims 20 and 31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Park et al. (US 2002/0160313). Claims 24 and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. in view of Iguchi et al. (U.S. 6,197,480). Claims 21 and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. in view of Roach (US 2004/0170925). Claims 19, 22, 23, 28 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Iguchi et al. in view of Sugimoto et al.

Claims 19 and 30 have been canceled and Claims 21-29 and 32-36 have been amended to depend on claims 20 and 31, respectively. Accordingly, Applicant respectfully submits that the prior art rejections of Claims 19, 21-30, and 32-36 are moot. Applicant respectfully traverses the rejection of Claims 20 and 31.

Claim 20 recites:

A method for forming a thick film pattern, comprising the steps of:
applying to a support a photosensitive paste including an inorganic powder, a photosensitive monomer, a photopolymerization initiator, and a polymer, wherein a ratio of the photosensitive monomer to a total amount of the photosensitive monomer and the polymer satisfies the condition represented by the following Formula:

$$\frac{\text{photosensitive monomer}}{(\text{photosensitive monomer} + \text{polymer})} \geq 0.86,$$

so as to form a photosensitive paste film;
subjecting the photosensitive paste film to an exposure treatment;
and

developing the photosensitive paste film subjected to the exposure treatment so as to form a thick film pattern. (emphasis added)

Applicant's Claim 31 recites features that are similar to the features recited in Applicant's Claim 20, including the above-emphasized feature.

With the unique combination and arrangement of features recited in Applicant's Claims 20 and 31, including the feature of "applying to a support a photosensitive paste including an inorganic powder, a photosensitive monomer, a photopolymerization initiator, and a polymer, wherein a ratio of the photosensitive monomer to a total amount of the photosensitive monomer and the polymer satisfies the condition represented by the following Formula: $\text{photosensitive monomer}/(\text{photosensitive monomer} + \text{polymer}) \geq 0.86$," Applicant has been able to provide a method for forming a thick film pattern, the method being capable of efficiently forming via photolithography a thick film pattern having a large thickness and exhibiting high dimension precision and high shape precision, a method for manufacturing an electronic component by using the thick film pattern, and a photolithography photosensitive paste suitable for being used therefor (see, for example, the paragraph bridging pages 2 and 3 of the Substitute Specification).

The Examiner alleged that Park et al. teaches all of the features recited in Applicant's Claims 20 and 31, except for the ratio $\text{photosensitive monomers}/(\text{photosensitive monomers} + \text{polymeric binder}) \geq 0.86$. The Examiner further alleged that Park et al. teaches in Examples 1 and 2, the ratio $\text{photosensitive monomer}/(\text{photosensitive monomer} + \text{polymer})$ is about 0.833, that the polymeric binder of Park et al. could be comprised in the photosensitive paste composition in an amount 1-15% and the Examples 1, 2 of Park et al. show an amount of polymeric binder of 3%, and thus, that "[b]y further reducing the amount of polymeric binder within the limits indicated by Park et al., the limitation regarding the ratio required by the instant application is met." Applicant respectfully disagrees.

Contrary to the Examiner's allegations, although Park et al. teaches that the polymeric binder could be comprised in the photosensitive paste composition in an

amount of 1-15%, Park et al. fails to teach or suggest any specific ratio of photosensitive monomer to polymeric binder other than the ratios disclosed in the Examples shown in Table 1, and certainly fails to teach or suggest the feature of "the ratio photosensitive monomers/(photosensitive monomers+polymeric binder) \geq 0.86" as recited in Applicant's Claim 20, and similarly in Applicant's Claim 31.

As noted by the Examiner, Examples 1 and 2 have a ratio photosensitive monomers/(photosensitive monomers+polymeric binder) of about 0.833. However, this is the upper limit of the ratio (photosensitive monomers)/(photosensitive monomers+polymeric binder), and Examples 3 and 4 shown in Table 1 of Park et al. clearly disclose ratios (photosensitive monomers)/(photosensitive monomers+polymeric binder) that are substantially less than 0.833. In other words, the maximum value of the ratio (photosensitive monomers)/(photosensitive monomers+polymeric binder) disclosed in Park et al. is about 0.833.

Furthermore, Park et al. discloses, in paragraph [0029], "The role of the binder polymer which acts as a binder of the fluorescent material is very important in the photopolymerization type photosensitive fluorescent paste of the present invention." Thus, one of ordinary skill in the art would not have been motivated to further reduce the amount of binder below the amount disclosed in Examples 1 and 2 because the existence of the binder polymer, and consequently, the maximum value of the ratio of 0.883 is very important to the invention.

In contrast to Park et al., in the present invention, the amount of polymer binder is kept to a minimum. By keeping the amount of polymer binder to a minimum (i.e. keeping the ratio (photosensitive monomers)/(photosensitive monomers+polymeric binder \geq 0.86), in the exposure step, refraction, scattering, absorption, and the like of the radiated light by the polymer can be reduced, the ultraviolet light easily reaches the inside of the photosensitive paste film, and the micro-Brownian motion of the photosensitive monomer is prevented from being hindered by the polymer. Consequently, it becomes possible to form reliably a thick film pattern having a large

thickness and exhibiting high dimension precision and high shape precision (see, for example, the paragraph bridging pages 8 and 9 of the Substitute Specification).

Therefore, Applicant respectfully submits that, contrary to the Examiner's allegations, one of ordinary skill in the art would not have been motivated to further reduce the amount of polymer binder of Park et al. because Park et al. teaches away from such a further reduction.

A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that the applicant took. In re Gurley, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994).

The Examiner is reminded that it is error to find obviousness where references diverge and teach away from the invention at hand. W.L. Gore & Assoc. v. Garlock Inc., 220 USPQ 303, 311 (Fed. Cir. 1983).

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 20 and 31 under 35 U.S.C. § 103(a) as being unpatentable over Park et al.

In view of the foregoing amendments and remarks, Applicant respectfully submits that Claims 20 and 31 are allowable. Claims 21-29 and 32-36 depend upon Claims 20 and 31, and are therefore allowable for at least the reasons that Claims 20 and 31 are allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

Application No. 10/596,000
January 8, 2008
Reply to the Office Action dated October 10, 2007
Page 10 of 10

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Dated: January 8, 2008

/Christopher A. Bennett, #46,710/
Attorneys for Applicant

KEATING & BENNETT, LLP
8180 Greensboro Drive, Suite 850
Tyson's Corner, VA 22102
Telephone: (703) 637-1480
Facsimile: (703) 637-1499

Joseph R. Keating
Registration No. 37,368

Christopher A. Bennett
Registration No. 46,710